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THE THELEPHORACEAE OF NORTH AMERICA. VIII[1]

CONIOPHORA

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CONIOPHORA

Coniophora De Candolle, Fl. Fr. **6** : 34. 1815; Persoon, Myc. Eur. **1** : 153. 1822; Karsten, Rev. Myc. **3**[9] : 23. 1881; Finska Vet.-Soc. Bidrag Natur och Folk **37** : 159. 1882; Sacc. Syll. Fung. **6** : 647. 1888; Massee, Linn. Soc. Bot. Jour. **25** : 128. 1889; Schroeter, Krypt.-Fl. Schlesien **3** : 430. 1888; Engl. & Prantl, Nat. Pflanzenfam. **I.1**** : 120. 1898.—*Coniophora* as a subgenus of *Corticium* Fries, Hym. Eur. 657. 1874; Cooke, Grevillea **8** : 88. 1880.—*Coniophorella* Karsten, Finl. Basidsv. 438. 1889; Bresadola, Ann. Myc. **1** : 110. 1903.

Fructifications resupinate, effused, fleshy, subcoriaceous or membranaceous; hymenium somewhat undulate-tubercular, granular, or even, usually pulverulent with the spores; cystidia present in some species; basidia simple; spores even, ochraceous, sometimes nearly colorless.

Coniophora is closely connected on one side with *Corticium* and *Peniophora* by such pale-spored species as *Coniophora polyporoidea,* on another side with the colored-spored section of *Merulius,* and on still another with *Grandinia* by several species with granular or minute papillae in the hymenium, although the spores of *Coniophora* are colored, while those of *Grandinia* are white.

Fully developed, mature fructifications of *Merulius* have the hymenial surface more or less reticulate with obtuse folds, imperfectly porose, or obsoletely toothed, while the departure from the even hymenial surface in *Coniophora* is at the most only undulate-tubercular or granular. Since some species

NOTE.—Explanation in regard to the citation of specimens studied is given in Part VI, Ann. Mo. Bot. Gard. **3**: 208, footnote. The technical color terms used in this work are those of Ridgway, Color Standards and Nomenclature. Washington, D. C., 1912.

[1] Issued September 20, 1917.

of *Merulius* have the hymenium even in some small, immature fructifications and with a broad, marginal, even region in larger ones, it is necessary to see fully mature and well-developed fructifications to be certain that a collection of one of these connecting species is a *Coniophora* rather than a *Merulius*. The absence of a definite statement by De Candolle on this point led Fries to question the generic position of *Coniophora membranacea* DC.

The dark color of spores in the mass in spore collections is a decisive character for distinguishing some species of *Coniophora* from *Corticium* and *Peniophora*. In working with dried herbarium specimens which lack spore collections, if the natural color pigment of sections is destroyed and bleached by KHO solution, some sections should be treated with lactic acid to determine whether the spores are hyaline or pigmented like the hyphae. In my experience lactic acid does not change a common, ochraceous, fungous pigment which is dissolved and bleached by KHO solution.

All our species of *Coniophora* are saprophytic on wood and cause dry rot of the wood. The most of these species are rare or have been collected infrequently, and record is lacking of the extent of rot which they cause. *Coniophora cerebella*, more commonly called *C. puteana*, is common and widely distributed throughout the northern United States and Canada. It is very destructive to structural timber of coniferous species if poorly seasoned or if used in moist places where there is a poor circulation of air or if used in contact with the ground without previous treatment with a wood preservative. In the United States this species seems to be as important an agent of timber decay as the *Merulius lacrymans* group of species is in Europe. While *Coniophora cerebella* attacks chiefly coniferous timber of buildings, bridges, docks, etc., in forests it is often found on logs of deciduous species. *C. arida* is another species of this genus so common as to be of economic importance. This species has been collected but rarely on other than a coniferous substratum; it ranges rather farther south than the general range of *C. cerebella* but has not been received from farther south than Louisiana.

The collections which have been available seem to indicate that *Coniophora* is more abundant in temperate than in tropical regions.

Our few species which have cystidia are not segregated as *Coniophorella,* because such segregation would place two common species, *C. suffocata* and *C. olivascens,* in the position of troublesome intermediates with some of their specimens seeming to belong in *Coniophora* in the restricted sense and others in *Coniophorella.* The per cent of connecting species is obviously too large for cleavage into natural genera.

Key to the Species

Neither incrusted nor hair-like cystidia present in the hymenium, with the exception of *C. suffocata* which sometimes has short cystidia barely distinguishable from the basidia, and of *C. olivascens,* some sections of which may lack cystidia 1

Cystidia present 8

1. Fructification fleshy when growing, often 1 mm. thick, separable from substratum; hyphae densely interwoven, 4–7 μ in diameter, not incrusted ..... *1. C. cerebella*

1. Fructification drying tawny olive to snuff-brown, 200–250 μ thick, not fleshy, separable from the substratum; spores fusiform, tapering at both ends, 18–21×5–6 μ ..... *2. C. fusispora*

1. Fructification not fleshy, dry; spores less than 15 μ long 2

2. Spores 8×3–4 μ; fructification described originally as sulphur-cinereous and papillate ..... *7. C. sistotremoides*

2. Hymenium not papillate 3

3. Fructification not stratose; spores between 10 and 13 μ long 4

3. Fructification not stratose; spores less than 10 μ long 6

3. Fructification stratose, snuff-brown throughout, velvety, ½–1 mm. thick ..... *11. C. dryina*

4. Fructification neither stratose nor with incrusted hyphae 5

4. Fructification not stratose but with incrusted hyphae, avellaneous to tawny olive and Saccardo's umber ..... *12. C. suffocata*

5. Fructification adnate, 100–500 μ thick, drying from warm buff to tawny olive or darker, with paler margin; hyphae loosely interwoven, 2–3 μ in diameter, without inflations ..... *3. C. arida*

5. Closely resembling *C. arida* but with hyphal portions occasionally swollen to 4–7 μ in diameter ..... *4. C. Kalmiae*

6. Spores ellipsoidal, 7–8×3–4 μ; hyphae with inflations 9–12 μ in diameter, and with pyriform, vesicular hyphal ends ..... *5. C. inflata*

6. Spores broadly ovoid 7

6. Spores subglobose, 4–5×4 μ; fructification pinkish tan; hyphae not incrusted, not nodose-septate. (*C. olivascens* has nodose-septate hyphae) ..... *10. C. Harperi*

7. Fructification membranaceous, separable, pinkish buff, the margin white, cottony, and usually with prominent radiating mycelial strands ..... *6. C. polyporoidea*

7. Fructification spongy, hypochnoid, between pinkish buff and cinnamon-buff throughout and at the margin; hyphae 6–7 μ in diameter .... *8. C. vaga*

7. Fructification light pinkish cinnamon, adnate; hyphae 2–2½ μ in diameter, hyaline; spores 7–8×6 μ ..... *9. C. avellanea*
8. Cystidia large, more than 5 μ in diameter 9
8. Cystidia small, only 3–5 μ in diameter 11
9. Spores more than 7 μ long; fructification dark-colored, sepia, and buffy citrine to olive-brown 10
9. Spores 3×2 μ; fructification primuline-yellow ..... *16. C. flava*
10. Fructification very dark, drying Saccardo's umber to olive-brown throughout; hyphae rigid; cystidia protruding up to 120 μ .... *13. C. umbrina*
10. Fructification paler, buffy citrine and Saccardo's olive to brownish olive; hyphae paler and thinner-walled, often collapsed; cystidia protruding up to 100 μ ..... *14. C. olivacea*
10. Fructification drying sepia; hyphae nearly black, rigid; cystidia protruding up to 60 μ; spores 9–10×4½–6 μ ..... *15. C. atrocinerea*
11. Spores 6–7×2½–3 μ; fructification very thin, adnate, drying raw sienna, suggestive of the conidial stroma of an *Hypoxylon* ..... *17. C. laeticolor*
11. Spores 4–4½×2½–3 μ, pale and concolorous with the hyphae; fructification cream-color to Naples yellow throughout; hyphae loosely interwoven, rigid, abundantly nodose-septate ..... *18. C. byssoidea*
11. Spores about 5×3½ μ, dark-colored; fructification olive-lake to olive-citrine; hyphae lax, hyaline ..... *19. C. olivascens*

1. Coniophora cerebella Pers. Myc. Eur. **1**: 155. 1822; Schroeter, Krypt.-Fl. Schlesien **3**: 430. 1888; Bresadola, Ann. Myc. **1**: 110. 1903.

Thelephora cerebella Pers. Syn. Fung. 580. 1801; Alb. & Schw. Consp. Fung. 282. 1805.—*Thelephora puteana* Schumacher, Pl. Saell. **2**: 397. 1803; Fries, Syst. Myc. **1**: 448. 1821; Elenchus Fung. **1**: 194. 1828; Pers. Myc. Eur. **1**: 144. 1822.—*Corticium* (subg. *Coniophora*) *puteanum* (Schum.) Fries, Hym. Eur. 657. 1874; Cooke, Grevillea **8**: 88. 1880.—*Coniophora puteana* (Schum.) Karsten, Finska Vet.-Soc. Bidrag Natur och Folk **37**: 159. 1882; Finl. Basidsv. 435. 1889; Patouillard, Tab. Anal. Fung. 113. *f. 253.* 1884; Sacc. Syll. Fung. **6**: 647. 1888; Massee, Linn. Soc. Bot. Jour. **25**: 129. 1889.

Illustrations: Fl. Dan. *pl. 2035;* Patouillard, Tab. Anal. Fung. *f. 253, 579;* Möller, Hausschwamm-forsch. 1: *pl. 3. f. 7; pl. 4. f. 8, 9, 11; pl. 5. f. 15;* Hennings in Engl. & Prantl, Nat. Pflanzenfam. **I.** 1**: *f. 67 F, G.*

Fructification broadly effused, suborbicular, fleshy, separable from the substratum, drying Isabella-color and tawny olive to Brussels brown, the margin whitish and mucedinous; hymenium even, undulate or gyrose, with low and broad,

dome-shaped tubercules; in structure 300–1000 μ thick, composed of densely interwoven, hyaline, even-walled hyphae 4–7 μ in diameter; no cystidia; basidia with 4 sterigmata; spores giving their color to the hymenium, even, 10–14×6–7 μ.

Fructifications usually about 4–6 cm. in diameter or elongated up to 15 cm. long, 5 cm. broad, sometimes larger, $\frac{1}{3}$–1 mm. thick.

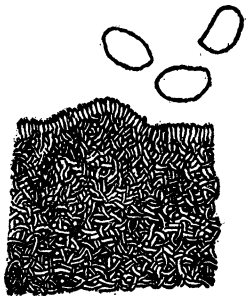

Fig. 1
C. cerebella.
Section of fructification × 45; spores × 665.

On logs and wood of both coniferous and frondose species, but more common on coniferous kinds. Quebec to District of Columbia and westward to British Columbia and California. Apparently rare in tropical America. July to February.

Well-developed specimens of *C. cerebella* are fleshy and thick and frequently have the hymenial surface protrude in broad, dome-shaped tubercules; young and thin fructifications are likely to be confused with *C. arida,* which has the same color but in section has its hyphae much less compactly interwoven and not as coarse as in *C. cerebella.*

Specimens examined:

Exsiccati: Cavara, Fungi Longobardiae, 14; Ell. & Ev., N. Am. Fungi, 1588 (in copy of Mo. Bot. Gard. Herb. but not in copies of Farlow Herb. and of U. S. Dept. Agr. Herb.); Karsten, Fungi Fenn., 135; Krieger, Fungi Sax., 1201.

Sweden: Femsjö, *E. Fries* (in Herb. Fries, determined by Fries).

Finland: *P. A. Karsten,* in Karsten, Fungi Fenn., 135.

Austria-Hungary: definite locality not given, *Strasser,* comm. by J. Bresadola.

Germany: Saxony, *W. Krieger,* in Krieger, Fungi Sax., 1201.

Italy: Pavia, *F. Cavara,* in Cavara, Fungi Longobardiae, 14.

Canada: definite locality not given, *J. Macoun, 11, 23, 44, 58, 79;* Lower St. Lawrence Valley, *J. Macoun, 13.*

Quebec: Hull, *J. Macoun, 377;* Montreal, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 44053).

Ontario: Ottawa, *J. Macoun, 36, 700;* Harraby, Lake Rosseau, *E. T. & S. A. Harper, 591, 594.*

Vermont: Middlebury, *E. A. Burt,* two collections; Little Notch, *E. A. Burt.*

Massachusetts: Belmont Spring, *W. G. Farlow, 4;* Weston, *C. Bullard,* comm. by W. G. Farlow; Cambridge (in Mo. Bot. Gard. Herb., 43890).

New York: Albany, *H. D. House* (in Mo. Bot. Gard. Herb., 14831); Floodwood, *C. H. Peck;* Ithaca, *G. F. Atkinson, 2603,* and Cornell Univ. Herb., 14190, and *L. A. Zinn, 88* (the last in Mo. Bot. Gard. Herb., 9062).

New Jersey: Newfield, *J. B. Ellis,* in Ell. & Ev., N. Am. Fungi, 1588 in some copies.

Pennsylvania: Spruce Creek, *J. H. Faull, 324* (in Mo. Bot. Gard. Herb., 44928); State College, *L. O. Overholts, 2660* (in Mo. Bot. Gard. Herb., 13160).

District of Columbia: Washington, *C. L. Shear, 1268.*

Ohio: Cincinnati, *A. P. Morgan,* Lloyd Herb., 2603.

Michigan: Ann Arbor, *C. H. Kauffman, 33, 46* (the latter in Mo. Bot. Gard Herb., 6823); Escanaba, *C. J. Humphrey, 1449* (in Mo. Bot. Gard. Herb., 4825); New Richmond, *R. W. Kellet,* comm. by A. H. W. Povah, 8 (in Mo. Bot. Gard. Herb., 13263).

Illinois: River Forest, *E. T. & S. A. Harper, 829.*

Iowa: Webster Co., *O. M. Oleson, 447* (in Mo. Bot. Gard. Herb., 44054).

Missouri: St. Louis, *B. M. Duggar* (in Mo. Bot. Gard. Herb., 5687).

Montana: Missoula, *J. R. Weir, 399* (in Mo. Bot. Gard. Herb., 9535); Bonner, *J. R. Weir, 407* (in Mo. Bot. Gard. Herb., 21604).

Idaho: Priest River, *J. R. Weir, 67, 139* (the latter in Mo. Bot. Gard. Herb., 8344).

British Columbia: Sidney, *J. Macoun, 2* (in Mo. Bot. Gard. Herb., 5756); locality not given, *J. Macoun, 855,* comm. by J. Dearness (in Mo. Bot. Gard. Herb., 12410).

Washington: Bingen, *W. N. Suksdorf, 667, 880;* Olympia, *C. J. Humphrey, 6294.*

California: Berkeley, *H. A. Lee,* two collections, comm. by W. A. Setchell, 1017, 1018 (in Mo. Bot. Gard. Herb., 44243, 44244); San Francisco, *W. A. Setchell, 1034* (in Mo. Bot. Gard. Herb., 44242).

Mexico: Guernavaca, *W. A. & Edna L. Murrill, 534,* N. Y. Bot. Gard., Fungi of Mexico (in Mo. Bot. Gard. Herb., 54511).

2. C. fusispora (Cooke & Ell.) Cooke in Sacc. Syll. Fung. **6**: 650. 1888; Massee, Linn. Soc. Bot. Jour. **25**: 133. 1889.

Corticium fusisporum Cooke & Ell. Grevillea **8**: 11. 1879.—*Corticium fusisporum* (subg. *Coniophora*) Cooke, Grevillea **8**: 89. 1880.

Type: type and cotype in Kew Herb. and in N. Y. Bot. Gard. Herb. respectively.

Fructification effused, thin, soft, readily separable, drying from tawny olive to snuff-brown, the margin mucedinous, pallid; hymenium even, pulverulent; structure in section 200–250 μ thick with (1) a layer next to the substratum of loosely and longitudinally arranged hyphae, hyaline, thin-walled, collapsing, 4–5 μ in diameter, sometimes granule-incrusted, sometimes forming rope-like mycelial strands 20–25 μ in diameter, and with (2) a compact hymenial layer; no cystidia; spores giving the color to the fructification, fusiform, tapering at both ends, curved at the base, 18–21×5–6 μ.

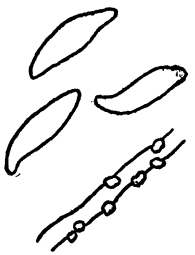

Fig. 2
C. fusispora.
Spores, incrusted hypha. × 665.

On pine wood in wood pile and on pine logs. Newfield, New Jersey. September.

This species is so similar to *C. cerebella* in color and probably in diameter of fructification that when Ellis collected it again, seven years after his type collection, he confused these later specimens with *C. puteana* and distributed some specimens under the latter name in some copies of his exsiccati. *C. fusispora* is distinct from *C. cerebella* by being thinner, dry rather than fleshy, having longer and more pointed spores, and by being two-layered and with the layer next to the substratum composed of very loosely arranged hyphae having

some granular incrustation rather than of a uniformly compact, fleshy, non-incrusted hyphal structure from substratum to basidia as in *C. cerebella.*

Specimens examined:

Exsiccati: Ell. & Ev., N. Am. Fungi, 1588 (in the copies of U. S. Dept. Agr. Herb. and of Farlow Herb., but not in copy of Mo. Bot. Gard. Herb.).

New Jersey: Newfield, *J. B. Ellis, 3092 to Cooke,* type (in Kew Herb.); same locality and collector, Ell. & Ev., N. Am. Fungi, 1588 (in copies of U. S. Dept. Agr. Herb. and of Farlow Herb.).

3. C. arida (Fr.) Karsten, Finska Vet.-Soc. Bidrag Natur och Folk **37**: 161. 1882; Sacc. Syll. Fung. **6**: 648. 1888; Massee, Linn. Soc. Bot. Jour. **25**: 132. 1889.

Thelephora arida Fries, Elenchus Fung. **1**: 197. 1828.—*Corticium aridum* (subg. *Coniophora*) Fries, Hym. Eur. 659. 1874; Cooke, Grevillea **8**: 89. 1880. — *Coniophora Cookei* Massee, Linn. Soc. Bot. Jour. **25**: 136. 1889; Sacc. Syll. Fung. **9**: 242. 1891.

Illustrations: Fries, Icones Hym. *pl. 199. f. 1.*

Type: in Herb. Fries, authentic specimen in Kew Herb.

Fructification effused, membranaceous, adnate, drying from warm buff to tawny olive or rarely darker, the margin paler and sometimes whitish; hymenium even, pulverulent; structure in section 100–500 μ thick, composed of loosely interwoven, thin-walled, often collapsing, usually hyaline hyphae 2–3 μ in diameter, not incrusted; no cystidia; basidia with 4 sterigmata, protruding; spores tawny olive in a spore collection, even, 10–12×6–7 μ.

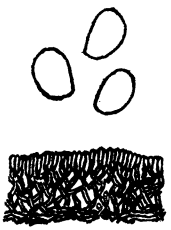

Fig. 3
C. arida.
Section of fructification × 45; spores × 665.

Fructifications 4–20 cm. long, 1–8 cm. broad, 1/10–1/2 mm. thick.

Common on prostrate limbs and logs and on under side of boards and timbers of coniferous species, rarely on frondose species. Canada to Louisiana and westward to Idaho.

Coniophora arida, although frequently confused with *C. cerebella,* is very distinct from it by brighter color and adnate habit, and dry and thin, rather than fleshy and thick, structure; in sections the hyphae of *C. arida* are only 2–4 μ in diameter, finer, thinner-walled and often collapsed, and more loosely interwoven than those of *C. cerebella. C. arida* and *C. cerebella* are both important timber destroyers.

Specimens examined:

Exsiccati: Cooke, Fungi Brit., ed. 2, 11, under the name *Thelephora puteana;* Ell. & Ev., Fungi Col., 1306, under the name *Coniophora Ellisii;* Romell, Fungi Exs. Scand., 37a and b.

Sweden: Femsjö, *E. Fries,* type (in Herb. Fries); *L. Romell, 207;* Stockholm, *L. Romell, 205,* and two collections in Romell, Fungi Exs. Scand., 37a and b.

England: Hampstead, in Cooke, Fungi Brit., ed. 2, 11.

Ontario: Ottawa, *J. Macoun, 19;* Port Credit, *J. H. Faull,* Univ. Toronto Herb., 308 (in Mo. Bot. Gard. Herb., 44891); Toronto, *G. H. Graham,* Univ. Toronto Herb., 683 (in Mo. Bot. Gard. Herb., 44942); Wilcox Lake, *J. H. Faull,* Univ. Toronto Herb., 647 (in Mo. Bot. Gard. Herb., 44927).

Vermont: Little Notch, near Bristol, *E. A. Burt.*

Massachusetts: Magnolia, *W. G. Farlow.*

Rhode Island: East Providence, *W. G. Farlow.*

New York: Albany, *H. D. House, 1384,* N. Y. State Mus. Herb., T2, and two unnumbered collections (in Mo. Bot. Gard. Herb., 54579, 14832, and 54383 respectively); Karner, *H. D. House,* N. Y. State Mus. Herb., 14.189, 14.203, 14.204, and an unnumbered collection (in Mo. Bot. Gard. Herb., 44723, 44724, 44726, 54381 respectively); Ithaca, *G. F. Atkinson, 29, 9238* (in Cornell Univ. Herb.).

New Jersey: Newfield, *J. B. Ellis, 3425,* cotype of *Coniophora Cookei* (in N. Y. Bot. Gard. Herb.) and the specimen in Ell. & Ev., Fungi Col., 1306.

Pennsylvania: Carbondale, *E. A. Burt.*

North Carolina: Biltmore, *E. Bartholomew, 5659* (in Mo. Bot. Gard. Herb., 44269).

Louisiana: St. Martinville, *A. B. Langlois, cz.*

Illinois: Riverside, *E. T. & S. A. Harper, 851.*

Missouri: St. Louis, *E. A. Burt* (in Mo. Bot. Gard. Herb., 54696).

Idaho: Priest River, *J. R. Weir, 83, 548* (the latter in Mo. Bot. Gard. Herb., 17806); Avery, *J. R. Weir, 393* (in Mo. Bot. Gard. Herb., 11982).

4. C. Kalmiae (Peck) Burt, n. comb.

Corticium Kalmiae Peck, N. Y. State Mus. Rept. **46**: 109. 1893; Sacc. Syll. Fung. **11**: 125. 1895.

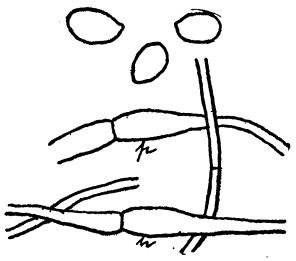

Fig. 4
C. Kalmiae.
Spores; hyphae with swollen portions, p. × 665.

Type: in Coll. N. Y. State.

Fructification effused, thin, tender, adnate, drying straw-yellow to tawny olive, the subiculum and margin composed of slender, whitish filaments; hymenium glabrous, continuous; structure in section 150–300 μ thick, composed of loosely interwoven, hyaline, non-incrusted hyphae mostly 2–3 μ in diameter but with occasionally a portion of a hypha swollen and 4–7 μ in diameter; no cystidia; spores tawny olive in a spore collection, even, 9–12×6–7 μ.

Fructification 3–4 cm. long, 2–3 cm. broad.

On prostrate limbs and logs of frondose species, a single collection on hemlock spruce. Vermont and New York. September and October. Rare.

The type of this species is bright straw-yellow; the other collections which I have referred here have similar structure but are rather darker, approaching *C. arida,* from which, perhaps, *C. Kalmiae* is not specifically distinct. The occasional swollen portions of hyphae afford the best character for separation from *C. arida.*

Specimens examined:

Vermont: Little Notch, near Bristol, *E. A. Burt.*

New York: Shokan, *C. H. Peck,* type (in Coll. N. Y. State); Ithaca, *C. H. Kauffman,* Cornell Univ. Herb., 14191; *C. Thom,* Cornell Univ. Herb., 14192—both of the Ithaca specimens comm. by G. F. Atkinson.

5. C. inflata Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructification effused, dry, membranaceous, separable, drying avellaneous, the margin mucedinous, concolorous in some places, deep olive-buff in others; hymenium even, pulverulent; in structure 300 μ thick, with hyphae next to the substratum very loosely arranged, colored, forming some rope-like strands up to 15 μ in diameter; hyphae 3–6 μ in diameter, here and there globosely inflated up to 9–12 μ in diameter, and sometimes with pyriform or subglobose, vesicular branches or hyphal ends up to 12×9 μ; no cystidia; spores colored, even, 7–8× 3–4 μ.

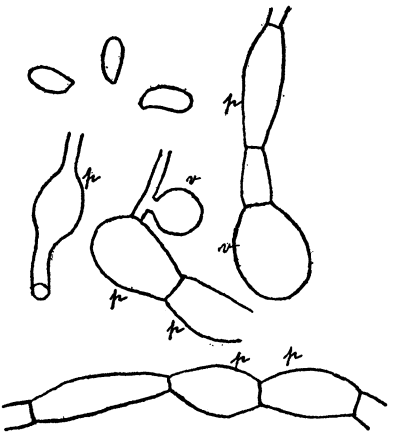

Fig. 5
C. inflata.
Spores; hyphae with inflated portions, *p*, and vesicular ends, *v*. × 665.

Fructifications 5–10 cm. long, 3–5 cm. broad.

On a pine box in contact with the soil in a garden. Parral, Mexico. August.

This species is characterized by fructification becoming separable from substratum, by dry and loosely interwoven structure, by inflated or vesicular hyphal organs, and by smaller spores than any of the preceding species. The dry rot caused in the pine wood is of the brown, brittle type. The vesicular organs do not appear to be chlamydospores.

Specimens examined:

Mexico: Parral, Chihuahua, *E. O. Matthews, 22,* type (in Mo. Bot. Gard. Herb., 4511).

6. C. polyporoidea (Berk. & Curtis) Burt, n. comb.

Corticium polyporoideum Berk. & Curtis, Grevillea **1**: 177. 1873; Sacc. Syll. Fung. **6**: 618. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 130. 1890. — *Corticium alboflavescens* Ell. & Ev. Acad. Nat. Sci. Phila. Proc. **1894**: 324. 1894; Sacc. Syll. Fung.

11 : 124. 1895. — *Coniophora alboflavescens* (Ell. & Ev.) v. Höhn. & Litsch. K. Akad. Wiss. Wien Sitzungsber. **116** : 791. 1907.—*Coniophora Petersii* v. Höhn. & Litsch. K. Akad. Wiss. Wien Sitzungsber. **117** : 1086. 1908, but not *Corticium Petersii* Berk. & Curtis.

Type: type and cotype in Kew Herb. and Curtis Herb.

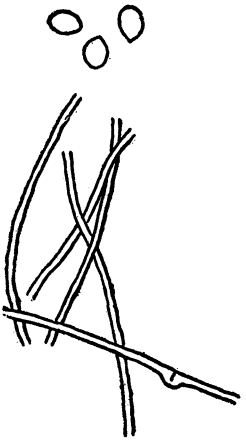

Fig. 6
C. polyporoidea.
Spores, hyphae. × 665.

Fructification effused, membranaceous, separable, drying pinkish buff, the margin white, cottony, often with radiating mycelial strands; hymenium even, pulverulent; in structure 400–1000 μ thick, composed (1) of a supporting layer of very loosely interwoven, hyaline hyphae 2½–3 μ in diameter, incrusted with scattered granules, and (2) of a compact hymenium; no cystidia; spores slightly colored under the microscope, even or slightly rough, 6–8×4½–6 μ.

Fructifications 1–15 cm. long, 1–5 cm. broad.

On prostrate fallen limbs and wood of various frondose and, more rarely, coniferous species, and on bark at bases of trees. New Hampshire to Florida and westward to Michigan and Arkansas. June to March.

This fine species has the color and surface texture of buckskin leather and a distinctly white margin. The spores differ from those of other species of the genus in having so little color and in absorbing eosin stain so intensely that their original color is masked by the dye and the species likely to be mistaken for a *Corticium*. The roughish spores show relationship to *Hypochnus*.

Specimens examined:

Exsiccati: Ell. & Ev., N. Am. Fungi, 1716, under the name *Corticium Petersii,* and 3005, under the name *Corticium alboflavescens;* Ell. & Ev., Fungi Col., 608, under the name *Corticium Petersii,* and 403, under the name *Corticium alboflavescens;* Ravenel, Fungi Am., 125, under the name *Cor-*

ticium ochroleucum, and 723, under the name *Corticium Petersii.*

New Hampshire: Chocorua, *W. G. Farlow, 19.*

Vermont: Middlebury, *E. A. Burt.*

New York: Alcove, *C. L. Shear, 1213;* Copake, *C. H. Peck,* N. Y. State Mus. Herb., T8 (in Mo. Bot. Gard. Herb., 54580); East Galway, *E. A. Burt,* two collections; Fort Ann, *S. H. Burnham, 46* (in Mo. Bot. Gard. Herb., 54424); Ganse-voort, *C. H. Peck,* N. Y. State Mus. Herb., T29 (in Mo. Bot. Gard. Herb., 54786); Karner, *H. D. House* (in Mo. Bot. Gard. Herb., 54382).

North Carolina: Asheville, *H. C. Beardslee, 02125;* Blowing Rock, *G. F. Atkinson, 4196, 4319, 4329* (the last in Cornell Univ. Herb.).

South Carolina: Seaboard, in Ravenel, Fungi Am., 723.

Georgia: Tallulah Falls, *A. B. Seymour,* comm. by W. G. Farlow, FF.

Florida: *W. W. Calkins* (in U. S. Dept. Agr. Herb.), and in Ell. & Ev., N. Am. Fungi, 1716; Gainesville, *Ravenel,* in Ravenel, Fungi Am., 125.

Alabama: *Peters,* type and cotype (in Kew Herb. and in Curtis Herb., 4559).

West Virginia: Nuttallburg, *L. W. Nuttall,* type distributions of *Corticium alboflavescens,* in Ell. & Ev., N. Am. Fungi, 3005, and Fungi Col., 403.

Michigan: Ann Arbor, *C. H. Kauffman, 35.*

Ohio: Cincinnati, *C. G. Lloyd, 4525.*

Kentucky: Harlan, *C. H. Kauffman, 67* (in Mo. Bot. Gard. Herb., 16419); Mammoth Cave, *C. G. Lloyd, 2561.*

Arkansas: Fordyce, *C. J. Humphrey, 5828*; Arkansas National Forest, *W. H. Long, 19861* (in Mo. Bot. Gard. Herb., 8959); Womble, *W. H. Long, 19791* (in Mo. Bot. Gard. Herb., 6388).

7. C. sistotremoides (Schw.) Massee, Linn. Soc. Bot. Jour. **25**: 133. 1889; Sacc. Syll. Fung. **9**: 241. 1891.

Thelephora sistotremoides Schweinitz, Naturforsch. Ges. Leipzig Schrift. **1**: 109. 1822; Am. Phil. Soc. Trans. N. S.

4 : 168. 1832; Fries, Elenchus Fung. 1 : 198. 1828. — *Odontia sistotremoides* (Schw.) Fries, Epicr. 529. 1838.

Type: a fragment in Herb. Schweinitz and portions in Herb. Fries and in Kew Herb. probably.

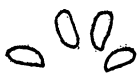

Fig. 7 C. sistotremoides. Spores × 665.

Effused, papery, papillate, sulphur-cinereous, the margin byssoid and white; papillae minute, pilose.

Broadly effused here and there on wood. Papillae abnormal, minute, occurring in the hymenium in scattered distant clusters, with the form in all respects of the teeth of *Sistotrema* and clothed with hairs as in *T. botryoides.*

—Translation of original description.

The portion of the type in Herb. Schweinitz is very small and not well preserved. I found its spores Saccardo's melleus, even, 8 × 3–4 μ, and hyphae of the same color, but did not detect scattered, clustered granules in the hymenial surface. The portion preserved may, however, have been from the even region between the clustered granules. Fries received a specimen of *C. sistotremoides* from Schweinitz and in 'Epicrisis' transferred this species to *Odontia,* placing it next to *Odontia fimbriata* and describing the granules as wart-like, minute, dentiform, with apex concolorous and fimbriate.

I have been on the lookout for a *Coniophora* which combines in one specimen both the granular surface described by Schweinitz and Fries and the spore characters of the authentic specimen but have not yet found it. *Coniophora olivascens* has a granular surface to its fructification, but its spores are smaller than those of *C. sistotremoides,* more subglobose in form, and its hyphae are hyaline. Schweinitz's statement that the papillae are clothed with hairs as in his *Hypochnus botryoides* is important in showing that he refers to a surface composed of matted hyphae as seen with a lens in the case of *Hypochnus botryoides* and not necessarily to the presence of hair-like cystidia protruding from the granules in sections, although Fries must have had the latter type of structure in mind to lead him to place this species in *Odontia* between *O. Barba Jovis* and *O. fimbriata.*

The northern specimens cited below have the approximate spore characters of *C. sistotremoides* but an even hymenium, hence they are all referred with doubt to this species for the present. Possibly the granular condition of this species may be confined to the vicinity of North Carolina.

Specimens examined:

Vermont: Grand View Mt., *E. A. Burt.*

Massachusetts: Magnolia, *W. G. Farlow;* Manchester, *W. G. Farlow, 3.*

New York: Alcove, *C. L. Shear, 1130.*

North Carolina: *Schweinitz,* type (in Herb. Schweinitz).

8. C. vaga Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructification effused, spongy, hypochnoid, tomentose, drying between pinkish buff and cinnamon-buff, the margin thinning out and concolorous; in structure 300 μ thick, composed of loosely interwoven, short-celled, suberect hyphae 6–7 μ in diameter, not incrusted, not nodose-septate, slightly colored and giving their color to the fructification; no cystidia; spores slightly colored, concolorous with the hyphae, even, apiculate, 7½–9×4½–6 μ.

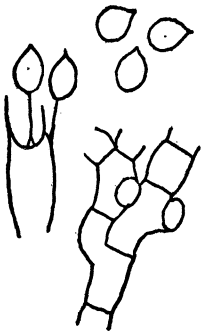

Fig. 8
C. vaga.
Basidium with sterigmata, sporcs, hypha. × 665.

Fructifications 8 cm. or more long, 3 cm. broad.

On bark of old log of *Ulmus americana.* Hudson Falls, New York. September.

In its general appearance *C. vaga* somewhat resembles *Corticium vagum* but the former is more compact and darker colored, and its spores are colored, shorter, broader, and almost mucronate-pointed.

Specimens examined:

New York: Hudson Falls, *S. H. Burnham, 20,* type (in Mo. Bot. Gard. Herb., 54498).

9. C. avellanea Burt, n. sp.

Type: in Burt Herb.

Fructification effused, dry, adnate, drying light pinkish cinnamon (exactly avellaneous of Saccardo's 'Chromotaxia'), the margin concolorous, determinate; hymenium even, pulverulent; in structure 120–200 μ thick, with the hyphae 2–2½ μ in diameter, hyaline, not incrusted, not nodose-septate, running longitudinally and crowded together along the substratum, densely interwoven in the subhymenium; no cystidia; spores olive-buff in spore collection, only slightly colored under the microscope, even, 7–8×6 μ.

Fig. 9
C. avellanea.
Spores × 665.

Fructification 3–5 cm. long, 1–3 cm. broad.

On decorticated coniferous wood. New York and Ohio. April and August.

C. avellanea differs from all the preceding species by its avellaneous color, closely adnate habit, thin and dense structure, fine hyphae, and nearly subglobose, slightly colored spores. *C. Harperi* is of nearly the same color, but has a loosely interwoven subiculum next to the substratum, coarser hyphae, and smaller spores.

Specimens examined:

New York: Altamont, *E. A. Burt;* East Galway, *E. A. Burt,* type.

Ohio: Madisonville, *C. G. Lloyd, 0191.*

10. C. Harperi Burt, n. sp.

Type: in Burt Herb.

Fructification effused, dry, membranaceous, drying pinkish tan, brittle, not strongly attached to the substratum, the subiculum and margin whitish, floccose; hymenium even, pulverulent; in structure 150–200 μ thick, composed of loosely interwoven, suberect, hyaline hyphae not incrusted, not nodose-septate, 3½–5 μ in diameter; no cystidia; spores slightly colored, even, sometimes slightly subangular, subglobose, 4–5×4 μ.

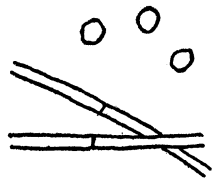

Fig. 10
C. Harperi.
Spores, hyphae.
× 665.

Fructification 3–7 cm. long, 2–3 cm. broad.

On white oak bark. Lake Geneva, Wisconsin. July.

This collection was at first referred to *C. olivascens,* but it differs from it in having no olivaceous component in its color, and its spores are subglobose and slightly subangular and its hyphae not nodose-septate. The fructifications are suggestive of *Corticium arachnoideum* in forming a delicate hymenial pellicle which is supported on a very thin and loose subiculum, but the hymenium and the spores are colored.

Specimens examined:

Wisconsin: Lake Geneva, *E. T. & S. A. Harper, 958,* type.

11. C. dryina (Berk. & Curtis) Massee, Linn. Soc. Bot. Jour. **25**: 135. 1889.

Corticium dryinum Berk. & Curtis, Grevillea **1**: 179. 1873; Sacc. Syll. Fung. **6**: 634. 1888.

Type: type and cotype in Kew Herb. and Curtis Herb. respectively.

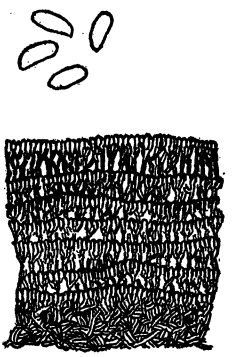

Fig. 11
C. dryina.
Section of fructification showing stratose structure × 45; spores × 665.

Fructification effused, thick, dry, adnate, velvety, drying snuff-brown both externally and within; hymenium even, velvety; in structure 500–1000 μ thick with (1) next to the substratum a thin layer composed of closely interwoven, thick-walled, rigid hyphae 4–4½ μ in diameter, nodose-septate, not incrusted, concolorous with the fructification, and with (2) a broad stratose hymenial layer made up of about 4 or 5 sets of hymenia and supporting subhymenial layers whose hyphae are erect, branching, concolorous, 4–4½ μ in diameter; no cystidia; basidia colored like the fructification, with 4 sterigmata; spores concolorous with the fructification, even, curved, pointed at the place of attachment, 8–9×3½–4 μ.

Fructification probably large, in the specimens known being about 4 cm. long, 3 cm. broad, and not having the original margin.

On rough surface of decaying oak wood. Alabama. November.

It is surprising that only the original collection of *C. dryina* has been made, for the two portions which are the type and cotype were apparently from a large conspicuous fructification. *C. dryina* has as distinguishing characters its thickness, snuff-brown color throughout, velvety surface, absence of cystidia, and stratose structure.

Specimens examined:

Alabama: *Peters, 709,* type and cotype (in Kew Herb. and Curtis Herb., 5204, respectively).

12. C. suffocata (Peck) Massee, Linn. Soc. Bot. Jour. **25**: 138. 1889.

Corticium suffocatum Peck, N. Y. State Mus. Rept. **30**: 48. 1879; Sacc. Syll. Fung. **6**: 621. 1888.

Type: in Coll. N. Y. State.

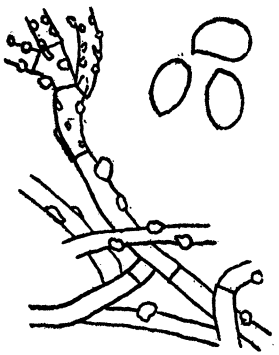

Fig. 12
C. suffocata.
Incrusted hyphae, spores.
× 665.

Fructification effused, indeterminate, membranaceous, not fleshy, somewhat separable when thick, drying from avellaneous to tawny olive and Saccardo's umber, the under side and margin usually whitish and mucedinous; hymenium even; in structure 60–500 μ thick, composed of loosely interwoven, usually hyaline, sometimes brownish, more or less incrusted hyphae 3½–6 μ in diameter under the incrustation, not nodose-septate; no cystidia or with cystidia barely distinguishable from immature basidia; spores snuff-brown in a spore collection, even, 10–12×6–7 μ.

Fructification 2–9 cm. long, 1–5 cm. broad.

Common on under side of coniferous boards and limbs lying on the ground, rare on frondose species. Canada to Louisiana and westward to Vancouver Island and Washington. May to January.

This species bears some resemblance to *C. cerebella* and *C. arida,* approaching the former in its separable tendency when thick and the latter in general habit, coloration, dry structure, and loose arrangement of its hyphae. It is distin-

guished from both species by having incrusted hyphae which are coarser than those of *C. arida.* The European *C. Betulae* Karst., of which I have an authentic specimen, does not form a compact hymenial membrane, is very thin, not at all separable from substratum, has the margin similar to the central portion of the fructification, hyphae frequently nodose-septate, and cystidia always present, 6 μ in diameter, emerging 20–30 μ above the basidia—differing in all the above respects from our *C. suffocata. C. subcinnamomea* Karst. differs by having in its hymenium noteworthy branching paraphyses and small, flexuous cystidia. *C. suffocata* is probably very destructive as a timber rot. The cystidia when occasionally distinguishable are about 6 μ in diameter and emerge up to 20 or even 40 μ above the basidia.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 328, under the name *Hymenochaete Ellisii;* Ell. & Ev., Fungi Col., 219, under the name *Coniophora puteana.*

Canada: Lower St. Lawrence Valley, *J. Macoun, 7, 48, 55.*

Ontario: Ottawa, *J. Macoun, 416;* Toronto, *G. H. Graham,* Univ. Toronto Herb., 681 (in Mo. Bot. Gard. Herb., 44939).

Vermont: Middlebury, *E. A. Burt.*

Massachusetts: Belmont Spring, *C. Bullard,* comm. by W. G. Farlow, 3, and an unnumbered specimen; Hammond's Pond, Brookline, *G. R. Lyman, 176.*

New York: Alcove, *C. L. Shear, 1303;* East Galway, *E. A. Burt;* Ithaca, *G. F. Atkinson, 997;* Karner, *H. D. House,* N. Y. State Mus. Herb., 14.165 (in Mo. Bot. Gard. Herb., 44714); Sandlake, *C. H. Peck,* type (in Coll. N. Y. State).

New Jersey: Newfield, *J. B. Ellis,* in Ellis, N. Am. Fungi, 328, and in Ell. & Ev., Fungi Col., 219, and on white oak, Feb. 3, 1877 (in Farlow Herb.).

Pennsylvania: State College, *C. R. Orton,* comm. by L. O. Overholts, 2897 (in Mo. Bot. Gard. Herb., 5719).

District of Columbia: Rock Creek, *C. L. Shear, 1350.*

Florida: *W. W. Calkins* (in U. S. Dept. Agr. Herb., under the name *Corticium epichlorum*).

Louisiana: St. Martinville, *A. B. Langlois, cg.*

Indiana: Millers, *E. T. & S. A. Harper, 648.*
Illinois: Glenellyn, *E. T. & S. A. Harper, 956.*
Missouri: Creve Coeur, *E. A. Burt* (in Mo. Bot. Gard. Herb., 54782).
Montana: Evaro, *J. R. Weir, 432* (in Mo. Bot. Gard. Herb., 1807).
Idaho: Priest River, *J. R. Weir, 8.*
British Columbia: Vancouver Island, *J. Macoun,* comm. by J. Dearness, V 134 (in Mo. Bot. Gard. Herb., 23093).
Washington: Bingen, *W. N. Suksdorf, 868, 895, 956;* Kalama, *C. J. Humphrey, 6226;* Olympia, *C. J. Humphrey, 6335.*

13. C. umbrina Alb. & Schw. ex Fries in Sacc. Syll. Fung. **6**: 652. 1888; Massee, Linn. Soc. Bot. Jour. **25**: 131. 1889.

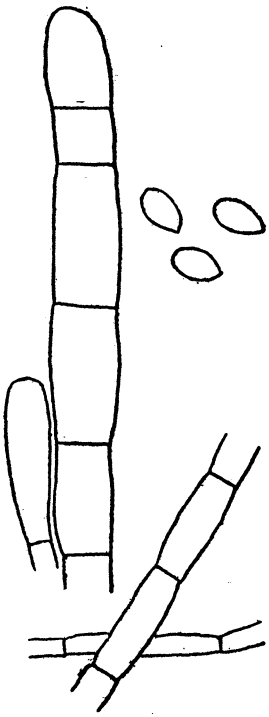

Fig. 13
C. umbrina.
Young basidium, upper portion of cystidium, spores, hyphae. × 665.

Thelephora umbrina var. β. Alb. & Schw. Consp. Fung. 281. 1805.—*Thelephora umbrina* (Alb. & Schw.) Fries, Elenchus Fung. **1**: 199. 1828; Epicr. 543. 1838.—*Corticium* (subg. *Coniophora*) *umbrinum* (Alb. & Schw.) Fries, Hym. Eur. 658. 1874.—*Coniophorella umbrina* (Alb. & Schw.) Bresadola, Ann. Myc. **1**: 111. 1903.

Type: location of type unknown to me.

Fructification effused, soft, not readily separable, villose beneath, drying Saccardo's umber to olive-brown, the margin usually of the same color, narrow, radiating; hymenium even, sometimes granular, tomentose, setulose; in structure 180–400 μ thick, with the hyphae colored, 3–6 μ or rarely more in diameter, rather rigid, not nodose-septate, loosely interwoven; cystidia concolorous, septate, obtuse, 100–200×9–12 μ, emerging up to 120 μ, even or granule-incrusted; spores concolorous under the microscope, even, 9–12×5–6 μ, flattened on one side.

Fructifications up to 3–8 cm. long, 2–4 cm. broad.

Under rotting pine boards and limbs on the ground. New York, Maryland, and Washington. October to December. Probably rare.

This species is characterized by its dark color—usually olive-brown—dark-colored hyphae, and very large, septate, colored, incrusted cystidia. Our American specimens agree well with that from Europe received from Bresadola, whose view of this species I follow.

Specimens examined:
Russian Poland: *Eichler,* comm. by G. Bresadola.
New York: Alcove, *C. L. Shear, 1326.*
Maryland: Takoma Park, *C. L. Shear, 997.*
Washington: Bingen, *W. N. Suksdorf, 869, 870.*

14. C. olivacea (Fr.) Karsten, Finska Vet.-Soc. Bidrag Natur och Folk **37**: 162. 1882; Sacc. Syll. Fung. **6**: 649. 1888; Massee, Linn. Soc. Bot. Jour. **25**: 129. 1889; Bresadola, I. R. Accad. Agiati Atti III. **3**: 116. 1897.

Hypochnus olivaceus Fries, Obs. Myc. **2**: 282. 1818 (in part).—*Thelephora olivacea* Fries, Elenchus Fung. **1**:197. 1828 (in part).—*Corticium* (subg. *Hypochnus*) *olivaceum* Fries, Hym. Eur. 660. 1874 (in part).—*Corticium* (subg. *Coniophora*) *olivaceum* (Fr.) Cooke, Grevillea **8**: 89. 1880.—*Coniophorella olivacea* (Fr.) Karsten, Finl. Basidsv. 438. 1889; Bresadola, Ann. Myc. **1**: 110. 1903.—*Corticium leucothrix* Berk. & Curtis, Grevillea **2**: 4. 1873.—*Corticium* (subg. *Coniophora*) *leucothrix* (Berk. & Curtis) Cooke, Grevillea **8**: 89. 1880.—*Coniophora leucothrix* (Berk. & Curtis) Cooke in Sacc. Syll. Fung. **6**: 648. 1888; Massee, Linn. Soc. Bot. Jour. **25**: 133. 1889.—*Corticium brunneolum* Berk. & Curtis, Grevillea **2**: 4. 1873.—*Corticium* (subg. *Coniophora*) *brunneolum* (Berk. & Curtis) Cooke, Grevillea **8**: 88. 1880.—*Coniophora brunneola* (Berk. & Curtis) Cooke in Sacc. Syll. Fung. **6**: 648. 1888; Massee, Linn. Soc. Bot. Jour. **25**: 134. 1889.—*Hymenochaete Ellisii* Berk. & Cooke, Grevillea **4**: 162. 1876.—*Corticium* (subg. *Coniophora*) *Ellisii* (Berk. & Cooke) Cooke, Grevillea **8**: 89. 1880.—*Coniophora Ellisii* (Berk. & Cooke) Cooke in

Sacc. Syll. Fung. **6** : 648. 1888; Massee, Linn. Soc. Bot. Jour. **25** : 129. 1889.—*Coniophora fulvo-olivacea* Massee, Linn. Soc. Bot. Jour. **25** : 134. 1889; Sacc. Syll. Fung. **9** : 241. 1891.

Type: in Herb. Fries; the specimen in Kew Herb. from Fries and named by him *Thelephora olivacea* is *Coniophora Betulae.*

Fructification effused, adnate, somewhat felt-like, and separable from the substratum with a scalpel, drying buffy citrine and Saccardo's olive to brownish olive, the margin thinning out and sometimes whitish; hymenium even, tomentose, setulose; in structure 200–700 μ thick, composed of more or less colored hyphae 3–6 μ in diameter, not nodose-septate, not usually incrusted, which are loosely interwoven next to the substratum and form a very dense hymenial layer; cystidia septate, granule-incrusted, tapering upward, concolorous with the hyphae at the base, paler above, 8–12 μ in diameter, protruding 50–100 μ; spores colored, even, 7–12×4½–5½ μ, often flattened on one side.

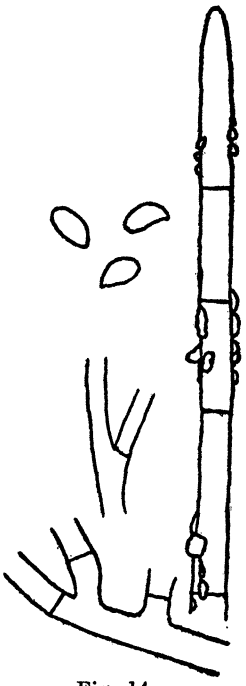

Fig. 14
C. olivacea.
Spores, protruded portion of cystidium, hyphae. × 665.

Fructification 4–10 cm. long, 2–5 cm. broad.

On coniferous wood and bark, rarely on frondose species. Canada to Louisiana and westward to Idaho.

C. olivacea is paler externally and internally than *C. umbrina,* has fewer cystidia, and hyphae with usually thinner walls and often collapsed. I have been able to detect no morphological characters which sharply separate these species. I was not able to study in Herb. Fries the original collection from Femsjö of *Coniophora olivacea,* for the specimen was loaned to Bresadola when I was at Upsala. I have presented *C. olivacea* as understood by Bresadola in the specimen communicated to me by him and cited below. The specimen of

Thelephora olivacea from Fries in Kew Herb., determined by Fries, has small, non-septate cystidia and incrusted hyphae, and is quite different from *C. olivacea* as understood by Bresadola. The specimen in Kew Herb. is not distinct from *Coniophora Betulae* Karst.

Specimens examined:

Exsiccati: Ell. & Ev., N. Am. Fungi, 3211; Krieger, Fungi Sax., 2011; Rabenhorst-Winter, Fungi Eur., 2721.

Finland: *Karsten,* in Rabenhorst-Winter, Fungi Eur., 2721 (in Kew Herb., the type of *Coniophora fulvo-olivacea*).

Sweden: *L. Romell, 209;* Stockholm, *L. Romell, 208.*

Germany: Schandau, *W. Krieger,* in Krieger, Fungi Sax., 2011.

Austria-Hungary: *G. Bresadola.*

Canada: *J. Macoun, 252;* St. Lawrence Valley, *J. Macoun, 67.*

Ontario: Ottawa, *J. Macoun, 382.*

New Hampshire: Chocorua, *W. G. Farlow.*

Vermont: Middlebury, *E. A. Burt.*

New York: Floodwood, *C. H. Peck;* Ithaca, *G. F. Atkinson, 2516; A. J. Pieters,* Cornell Univ. Herb., 5261; *G. F. Atkinson,* Cornell Univ. Herb., 14352; Karner, *H. D. House* (in Mo. Bot. Gard. Herb., 54395).

New Jersey: Newfield, *J. B. Ellis,* in Ell. & Ev., N. Am. Fungi, 3211.

Pennsylvania: Trexlertown, *W. Herbst.*

Maryland: Takoma Park, *C. L. Shear, 969.*

South Carolina: Society Hill, *M. A. Curtis, 4775,* the cotype of *Corticium leucothrix* (in Curtis Herb.).

Georgia: Tallulah Falls, *A. B. Seymour & W. L. Moss,* comm. by W. G. Farlow, a (in Mo. Bot. Gard. Herb., 44596).

Alabama: Bessie Junction, *C. J. Humphrey, 5355.*

Louisiana: *Dr. Hale,* the cotype of *Corticium brunneolum* (in Curtis Herb., 3664); Abita Springs, *A. B. Langlois, 2695, 2696.*

Ohio: Linwood, *C. G. Lloyd, 02834.*

Missouri: Creve Coeur, *E. A. Burt* (in Mo. Bot. Gard. Herb., 54770); St. Louis, *E. A. Burt* (in Mo. Bot. Gard. Herb., 54781).

Montana: Banner, *J. R. Weir, 405* (in Mo. Bot. Gard. Herb., 10582).

Idaho: Kaniksu National Forest, Priest River, *J. R. Weir, 68.*

15. C. atrocinerea Karsten in de Thümen, Myc. Univ. 1806. 1881; Soc. pro Fauna et Flora Fennica Meddel. **6**: 12. 1881; Finska Vet.-Soc. Bidrag Natur och Folk **37**: 162. 1882; Sacc. Syll. Fung. **6**: 650. 1888; Massee, Linn. Soc. Bot. Jour. **25**: 132. 1889.

Coniophorella atrocinerea Karsten, Finl. Basidsv. 438. 1889.

Type: type distribution in de Thümen, Myc. Univ., 1806.

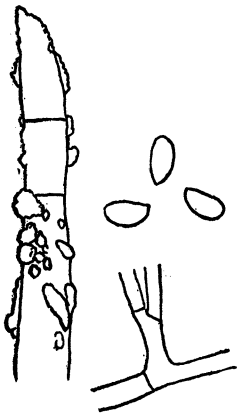

Fig. 15
C. atrocinerea.
Protruded part of cystidium, spores, hypha. × 665.

Fructification effused, byssoid-membranaceous, adnate, drying sepia, the margin somewhat mucedinous and paler, sometimes whitish; hymenium even; in structure 250–500 μ thick, composed of loosely interwoven, nearly black, rigid, even hyphae 3½–5 μ in diameter, not nodose-septate, not incrusted; cystidia incrusted, septate, 9–15 μ in diameter, emerging up to 60 μ; spores colored, even, 9–10×4½–6 μ.

Fructifications 1–2 cm. long, 1 cm. broad, becoming confluent in crevices of the bark so as to form patches up to 8 cm. long.

In crevices of bark of pine logs. Louisiana. January.

The Louisiana collection agrees closely with the type distribution from Finland in all respects except in having slightly broader spores, which are 6 μ in diameter in the American specimen and usually about 4½ μ in the type, although published by Karsten as 5–6 μ. This species is very distinct by its firm, rigid, and nearly black hyphae. It is strange that two specimens of so similar and marked structure occur at such widely distant localities without intermediate stations.

Specimens examined:

Exsiccati: de Thümen, Myc. Univ., 1806.

Finland: Mustiala, *P. A. Karsten,* type distribution, in de Thümen, Myc. Univ., 1806.

Louisiana: St. Martinville, *A. B. Langlois, 2639* in part.

16. C. flava Burt, n. sp.

Type: in Burt Herb. and N. Y. Bot. Gard. Herb.

Fructification effused, soft, membranaceous, separable from the substratum, drying primuline-yellow throughout, with the margin a little paler; hymenium even, cracked, somewhat pulverulent; in structure 400 μ thick (1) with the hyphae loosely interwoven next to the substratum, 3–4½ μ in diameter, occasionally nodose-septate, frequently more or less incrusted, and (2) with the hyphae more densely arranged in the subhymenium, more regularly incrusted, and containing many heavily incrusted, cylindric cystidia 8–9 μ in diameter, which do not protrude beyond the surface of the hymenium; hymenial cystidia usually not incrusted, 5–7 μ in diameter, emerging up to 30 μ, occasionally with a few incrusting granules near the base; spores concolorous with the hyphae and the fructification, borne 4 to a basidium, even, flattened or slightly curved on one side, 4×2 μ.

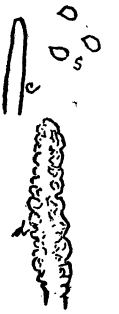

Fig. 16 C. flava. Protruded part of cystidium, *c;* incrusted cystidium from interior of fructification, *d;* spores, *s.* × 665.

The portion of a fructification which I have seen is 1½×1 cm.

Substratum not noted. Jamaica. January.

Although I have seen but a small portion of a fructification, which does not afford data as to margin or substratum, this portion shows a species which should be readily recognized by its bright yellow color throughout, peeling away from the substratum in a compact sheet, small spores flattened on one side, and by heavily incrusted, wholly buried cystidia.

Specimens examined:

Jamaica: Troy and Tyre, Cockpit Country, 2000 ft. altitude, *W. A. Murrill & W. Harris,* N. Y. Bot. Gard., Fungi of Jamaica, 1089.

17. C. laeticolor Karsten, Finl. Basidsv. 436. 1889; Massee, Linn. Soc. Bot. Jour. **25**: 137. 1889.

Xerocarpus laeticolor Karsten, Finska Vet.-Soc. Bidrag Natur och Folk **37** : 137. 1882; Soc. pro Fauna et Flora Fennica Meddel. **9** : 52. 1883.—*Corticium laeticolor* (Karst.) Sacc. Syll. Fung. **6** : 636. 1888.—*Coniophora crocea* Karsten, Rev. Myc. **9** : 10. 1887 (this synonym published by Karsten); Soc. pro Fauna et Flora Fennica Meddel. **14** : 83. 1888; Sacc. Syll. Fung. **6** : 651. 1888; Massee, Linn. Soc. Bot. Jour. **25** : 137. 1889.

Type: authentic specimen of *C. crocea* in Burt Herb.

Fig. 17
C. laeticolor. Section showing hyphae, cystidium, basidia, spores. × 665.

Fructification effused, adnate, indeterminate, drying raw sienna, the margin of the same color, thinning out; hymenium even, compact, somewhat pulverulent; in structure 60–120 μ thick, with the hyphae giving their bright color to the fructification, not incrusted, occasionally nodose-septate, 3–4 μ in diameter, ascending more or less densely from the substratum to the hymenial surface; cystidia cylindric, not incrusted, simple, or few-septate, 4–4½ μ in diameter, emerging 20–60 μ; spores concolorous with the hyphae, even, flattened on one side or slightly curved, 6–7×2½–3 μ.

Fructifications 4 cm. long, 2–2½ cm. broad.

On badly decayed, coniferous wood. Elkmont, Tennessee. September. Probably rare.

This species suggests by its bright color and thin, adnate habit the conidial stroma of some species of *Hypoxylon,* and it may have been overlooked heretofore on account of this resemblance. It is well marked by its bright color, thin and compact habit of growth, small, slender spores, and cystidia.

Specimens examined:

Finland: Mustiala, *P. A. Karsten,* under the name *Coniophora crocea.*

Tennessee: Elkmont, *C. H. Kauffman, 70* (in Mo. Bot. Gard. Herb., 16397).

18. C. byssoidea (Pers.) Fries, Hym. Eur. 659. 1874 (in subg. *Coniophora*); Karsten, Finska Vet.-Soc. Bidrag Natur och Folk **37**: 160. 1882; Sacc. Syll. Fung. **6**: 652. 1888.

Thelephora byssoides Persoon, Syn. Fung. 577. 1801; Fries, Syst. Myc. **1**: 452. 1821.—*Corticium* (subg. *Coniophora*) *byssoideum* (Pers.) Fries, Hym. Eur. 659. 1874.—*Coniophorella byssoidea* (Pers.) Bresadola, Ann. Myc. **1**: 111. 1903; Sacc. Syll. Fung. **17**: 183. 1905.—*Peniophora byssoidea* (Pers.) v. Höhn. & Litsch. K. Akad. Wiss. Wien Sitzungsber. **117**: 1084. 1908.—*Diplonema sordescens* Karsten, Finl. Basidsv. 430. 1889.—*Peniophora sordescens* (Karst.) Sacc. Syll. Fung. **9**: 240. 1891.

Fructification effused, dry, at first flaxy and hypochnoid, at length compact at the disk, drying cream-color to Naples yellow, the margin flaxy; hymenium even, tomentose; in structure 150–350 μ thick, composed of very loosely interwoven, rigid, nodose-septate hyphae 3–4 μ in diameter, which give the color to the fructification; cystidia slender, tapering, sharp-pointed, non-incrusted hairs, frequently nodose-septate, concolorous with the hyphae, 3–4½ μ in diameter, emerging up to 20–60 μ; spores concolorous with the hyphae but sometimes nearly hyaline under the microscope ,even, 4–4½×2½–3 μ, perhaps larger in spore collections.

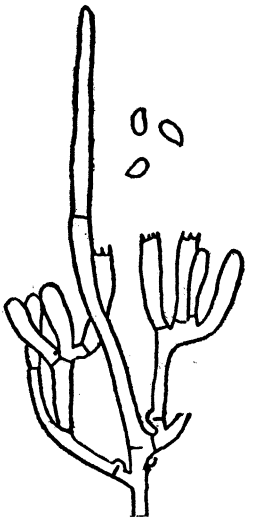

Fig. 18
C. byssoidea.
Hypha bearing cystidium and basidia; spores. × 665.

Fructifications ranging from 1 to 6 cm. in diameter, or perhaps larger.

On wood and objects on the ground and running over the humus in pine woods. Canada to Louisiana and westward to British Columbia and Oregon, also in Jamaica; apparently very common in the northwest. June to December.

If one does not overlook the pale color of the small spores, this species is easily recognized, for in *Coniophora* it is noteworthy among all species of the genus by its bright color—

cream-color to Naples yellow throughout—hypochnoid structure, rather stiff, loosely arranged, nodose-septate hyphae, and slender septate cystidia frequently nodose-septate.

Specimens examined:

Exsiccati: Cooke, Fungi Brit., ed. 2, 607, under the name *Corticium sulphureum;* Krieger, Fungi Sax., 363.

Finland: Mustiala, *P. A. Karsten,* authentic specimen of *Diplonema sordescens.*

Sweden: *L. Romell, 78, 79;* Stockholm, *L. Romell, 110, 111, 236.*

Germany: Saxony, Königstein, *W. Krieger,* in Krieger, Fungi Sax., 363.

Austria-Hungary: *G. Bresadola.*

England: in Cooke, Fungi Brit., ed. 2, 607, under the name *Corticium sulphureum.*

Canada: locality not given, *J. Macoun, 10* in part, *15, 22;* Lower St. Lawrence Valley, *J. Macoun, 39, 59, 61.*

Ontario: Ottawa, *J. Macoun, 142, 143.*

Vermont: Middlebury, *E. A. Burt,* two collections.

Connecticut: New Haven, *G. P. Clinton.*

New York: Fall Creek, *G. F. Atkinson, 7994;* Freeville, *G. F. Atkinson, 2589.*

Florida: locality not given, *W. W. Calkins;* Jacksonville, *R. A. Harper, 1, 2, 3, 11* (in Mo. Bot. Gard. Herb., 54527–54530 respectively).

Louisiana: De Ridder, *C. J. Humphrey, 2527* (in Mo. Bot. Gard. Herb., 12532); St. Martinville, *A. B. Langlois, di, j.*

Michigan: Michigamme, *C. J. Humphrey, 1455* (in Mo. Bot. Gard. Herb., 22972).

Montana: Birch Creek, Beaverhead National Forest, *C. J. Humphrey, 2553* (in Mo. Bot. Gard. Herb., 9524).

Idaho: Coeur d'Alene, *J. R. Weir, 623* (in Mo. Bot. Gard. Herb., 13853); Priest River, *J. R. Weir, 132, 343* (in Mo. Bot. Gard. Herb., 15761, 21363).

British Columbia: Kootenai Mountains, near Salmo, *J. R. Weir, 518, 537, 623, 448, 475, 483, 492, 505, 504* in part, *486* (in Mo. Bot. Gard. Herb., 19420, 1737, 13853, 8836, 20977, 21979, 21982, 2096, 14169, 20226 respectively); Sidney,

J. Macoun, 26 in part, *27* (in Mo. Bot. Gard. Herb., 5681, 8934); Vancouver Island, *J. Macoun,* comm. by J. Dearness, V 186 (in Mo. Bot. Gard. Herb., 20183).

Oregon: Joseph, *C. L. Shear, 1037.*

Jamaica: Cinchona, *W. A. & Edna L. Murrill,* N. Y. Bot. Gard., Fungi of Jamaica, 459.

19. C. olivascens (Berk. & Curtis) Massee, Linn. Soc. Bot. Jour. **25**: 138. 1889.

Corticium olivascens Berk. & Curtis, Grevillea **1**: 179. 1873; Sacc. Syll. Fung. **6**: 619. 1888.—*Corticium prasinum* Berk. & Curtis, Grevillea **1**: 179. 1873; Sacc. Syll. Fung. **6**: 619. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 153. 1890.—*Coniophora prasina* (Berk. & Curtis) v. Höhn. & Litsch. K. Akad. Wiss. Wien Sitzungsber. **116**: 781. 1907.—*Corticium chlorinum* Berk. & Curtis, Grevillea **1**: 179. 1873; Sacc. Syll. Fung. **6**: 636. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 154. 1890.—*Coniophora subochracea* Peck, N. Y. State Mus. Rept. **50**: 114. 1897; Sacc. Syll. Fung. **14**: 225. 1899.

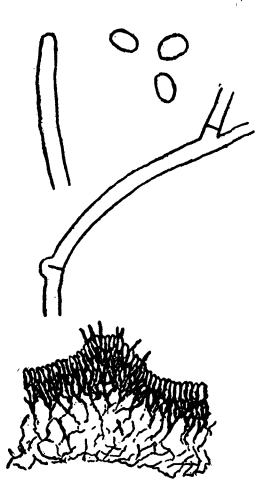

Fig. 19
C. olivascens.
Protruded part of cystidium, spores, and hypha, × 665; section showing cystidia on a granule × 45.

Type: type and cotype in Kew Herb. and Curtis Herb. respectively.

Fructification effused, dry, adnate, drying olive-lake to olive-citrine, the subiculum and margin whitish, floccose; hymenium even or minutely granular, more or less cracked; in structure 200–400 μ thick, with the granules rising up to 200 μ more, composed of hyaline, thin-walled, often collapsed, nodose-septate hyphae 3–5 μ in diameter, loosely interwoven, sometimes with rope-like hyphal strands near the substratum; granules dome-shaped, bearing hair-like cystidia scattered or in small clusters, not incrusted, often nodose-septate, 4–5 μ in diameter, emerging up to 60 μ; spores Isabella-color in a spore collection, even, 4–6×3–4 μ, mostly 5×3½ μ.

Fructifications 1½–3 cm. long, 1–2 cm. broad.

On coniferous bark and wood on the ground and on palmetto. Ontario to Louisiana, and in Cuba and the Bahama Islands. July to April.

C. olivascens is distinguished by its olivaceous color varying by intermediate shades to almost bottle-green, by its small spores, and by having hair-like cystidia protrude from its granules, frequently in clusters, as in the genus *Odontia.* The granular hymenial surface appears to be more frequent in northern collections than in those from the south, and the hyphae are more abundantly nodose-septate in northern specimens. Occasionally a collection will fail to show cystidia in a set of sections, especially if the fructification is rather young, but examination of other sets of sections from the oldest and most granular portions of the fructification will eventually demonstrate cystidia. *Grandinia virescens.* Pk. is colored exactly like *C. olivascens* and has the same general habit, but the spores of *G. virescens* are darker and minutely aculeate when the fructification is fully mature.

Specimens examined:

Exsiccati: Ravenel, Fungi Car. **5** : 29.

Canada: Ottawa, *J. Macoun, 25.*

Ontario: Port Credit, *J. H. Faull, 321* (in Mo. Bot. Gard. Herb., 44945).

Massachusetts: Boston, *Murray,* cotype (in Curtis Herb., 6392).

New York: Albany, *H. D. House* (in Mo. Bot. Gard. Herb., 15946); East Galway, *E. A. Burt;* Ithaca, *G. F. Atkinson, 22977; C. J. Humphrey,* Cornell Univ. Herb., 22562; Karner, *H. D. House, 14.190, 14.169, and two unnumbered collections* (in Mo. Bot. Gard. Herb., 44718, 44720, 54363, 54364); Menands, *C. H. Peck,* type of *Coniophora subochracea* (in Coll. N. Y. State); Westport, *C. H. Peck* (in N. Y. State Mus. Herb. and in Mo. Bot. Gard. Herb.).

New Jersey: Newfield, *J. B. Ellis,* comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 44641).

Pennsylvania: Whitehaven, *G. F. Atkinson, 8653.*

Alabama: *Peters,* type distribution of *Corticium prasinum* in

Ravenel, Fungi Car. **5**: 29, and cotype (in Curtis Herb., 6080).

Louisiana: Abita Springs, *A. B. Langlois, 2639* in part; St. Martinville, *A. B. Langlois, u.*

Michigan: Ann Arbor, *C. H. Kauffman, 21.*

Bahama Islands: Nassau, *A. E. Wight,* comm. by W. G. Farlow.

Cuba: San Diego de los Banos, *Earle & Murrill, 334,* N. Y. Bot. Gard., Fungi of Cuba.

EXCLUDED SPECIES

C. capnoides Ell. & Ev. Phila. Acad. Nat. Sci. Proc. **1894**: 324. 1894; Sacc. Syll. Fung. **11**: 129. 1895.

Type: type distribution in Ell. & Ev., N. Am. Fungi, 2808.

This fungus bears its spores singly on conidiophores, as stated in the original description, and is not a basidiomycete.

C. sordulenta Cooke & Massee in Sacc. Syll. Fung. **6**: 650. 1888; Massee, Linn. Soc. Bot. Jour. **25**: 132. 1889.

Type: type in Kew Herb.

This species is not distinct from *Thelephora pallescens* Schw., whose relationship to *Hypochnus thelephoroides* (Ell. & Ev.) Burt was pointed out in my comment on the latter in Ann. Mo. Bot. Gard. **3**: 236. 1916. I have recently prepared a new set of sections from the authentic specimen of *Thelephora pallescens* Schw. in Curtis Herb. This specimen is in fine condition and shows the spores fully as rough-walled or aculeate in aqueous mounts as those of *Hypochnus thelephoroides,* which, therefore, becomes a synonym of *T. pallescens* and should be displaced in my account of our species of *Hypochnus* by the name *Hypochnus pallescens* (Schw.) Burt, with synonymy and distribution as follows:

26. Hypochnus pallescens (Schw.) Burt, n. comb.

Thelephora pallescens Schweinitz, Am. Phil. Soc. Trans. N. S. **4**: 167. 1832.—*Stereum pallescens* Schweinitz in Sacc. Syll. Fung. **6**: 586. 1888.—*Corticium pallescens* (Schw.) Massee, Linn. Soc. Bot. Jour. **27**: 129. 1890.—*Thelephora insinuans* Schweinitz, Am. Phil. Soc. Trans. N. S. **4**: 167. 1832.—

Stereum insinuans Schweinitz in Sacc. Syll. Fung. **6** : 586. 1888.—*Coniophora insinuans* (Schw.) Massee, Linn. Soc. Bot. Jour. **25** : 138. 1889.—*Corticium* (subg. *Coniophora*) *sordulentum* Cooke & Massee, Grevillea **16** : 69. 1888.—*Coniophora sordulenta* Cooke & Massee in Sacc. Syll. Fung. **6** : 650. 1888; Massee, Linn. Soc. Bot. Jour. **25** : 132. 1889.—*Corticium thelephoroides* Ell. & Ev. Jour. Myc. **1** : 88. 1885; Sacc. Syll. Fung. **6** : 630. 1888.—*Hypochnus thelephoroides* (Ell. & Ev.) Burt, Ann. Mo. Bot. Gard. **3** : 235. 1916.

Specimens examined:

Exsiccati: Ell. & Ev., N. Am. Fungi, 2020, under the name *Corticium dryinum;* Ell. & Ev., Fungi Col., 706, under the name *Corticium vagum;* Ravenel, Fungi Am., 719, under the name *Peniophora flavido-alba* (in copy of U. S. Dept. Agr. Herb.).

Canada: Cedar Hill, Van Island, *J. Macoun, 62.*

New Hampshire: Chocorua, *W. G. Farlow.*

Massachusetts: Sharon, *A. P. D. Piguet,* comm. by W. G. Farlow (in Farlow Herb. and in Mo. Bot. Gard. Herb., 54787).

New Jersey: Newfield, *J. B. Ellis,* in Ell. & Ev., Fungi Col., 706.

Pennsylvania: Bethlehem, *Schweinitz,* types of *Thelephora pallescens* and *Thelephora insinuans* (in Herb. Schw. and in Curtis Herb.).

Georgia: Darien, *H. W. Ravenel,* in Ravenel, Fungi Am., 719 (in copy of U. S. Dept. Agr. Herb.).

Florida: *W. W. Calkins,* U. S. Dept. Agr. Herb.; Jacksonville, *W. W. Calkins,* in Ell. & Ev., N. Am. Fungi, 2020; New Smyrna, *C. G. Lloyd, 2138.*

Louisiana: Lake Charles, *C. J. Humphrey, 2538* (in Mo. Bot. Gard. Herb., 12959); St. Martinville, *A. B. Langlois, az, c, u, y, 2633, 2673,* and a specimen comm. by C. G. Lloyd, 3017.

Texas: Houston, *H. W. Ravenel, 239,* U. S. Dept. Agr. Herb.

Illinois: Cerro Gordo, *L. O. Overholts, 3284* (in Mo. Bot. Gard. Herb., 10640).

Missouri: comm. by *J. B. Ellis, 5055,* type of *Corticium sordulentum* (in Kew Herb.).

Washington: *Carpenter, 90,* type of *Corticium thelephoroides* (in N. Y. Bot. Gard. Herb., Kew Herb., Farlow Herb., and Mo. Bot. Gard. Herb.).

British Columbia: Kootenai Mountains, near Salmo, *J. R. Weir, 497* (in Mo. Bot. Gard. Herb., 21978); Vancouver, *J. Macoun, V 178,* comm. by J. Dearness (in Mo. Bot. Gard. Herb., 8938).

Mexico: Colima, *W. A. & E. L. Murrill,* N. Y. Bot. Gard., Fungi of Mexico, 591 (in Mo. Bot. Gard. Herb.).

Jamaica: Morce's Gap, *W. A. & E. L. Murrill,* N. Y. Bot. Gard., Fungi of Jamaica, 658.

Cuba: Alto Cedro, *L. M. Underwood & F. S. Earle,* N. Y. Bot. Gard., Plants of Cuba, 1530; San Diego de los Banos, Pinar del Rio Province, *F. S. Earle & W. A. Murrill, 572,* N. Y. Bot. Gard.

Porto Rico: Rio Piedras, *J. A. Stevenson, 5794* (in Mo. Bot. Gard. Herb., 54691).

Trinidad: Arepo Lavanna, *R. Thaxter,* comm. by W. G. Farlow, 20.

(To be continued.)